REMARKS

The Examiner is thanked for the examination of the application. In view of the foregoing amendments and the remarks that follow, the Examiner is respectfully requested to reconsider and withdraw the outstanding rejections.

Art Rejections:

Claims 21 – 34, 36, and 38 – 40 were rejected under 35 USC 103(a) as being unpatentable over the article *Town* in view of US 2004/0017977, hereinafter *Lam*. Claims 35 and 37 have been rejected under 35 USC 103(a) as being unpatentable over the article *Town* in view of *Lam*, and further in view of USP 6,826,342, hereinafter *Bise*. In response to the rejection, independent claims 21 and 40 have been amended to further distinguish the invention from the prior art. Support for the amendments may be found at least at page 6, line 1.

Claims 21 and 40 are the only independent claims pending. Claims 21 and 40 define a source of light with a broad (300nm) spectrum generated with long pulses (>0.5ns) in a fiber with a large core (>4 microns) with the output spectrum being substantially all (>80%) single mode. Generation of such spectra in a fiber, such as supercontinuum generation, is largely a nonlinear optical process. At the time of the invention, supercontinua were therefore generally generated via nonlinear fibers with small cores (a few microns or less) and with pump sources with short pulses typically in the ps or fs regimes. It was therefore surprising, at the time of the invention, that long pulses in a large core fiber were able to produce such a wide spectrum, particularly in substantially single mode.

Town discloses a supercontinuum source formed by a pump source providing long (42ns) pulses and a randomly microstructured fiber. The randomly structured fiber has multiple guiding regions with a diameter of *a few microns or less.* See page 235, 3rd paragraph. However, it is otherwise impossible to define. ("*Whilst it was impossible to determine the exact properties of the nonlinear guiding* ***regions*** *used in the randomly structured fiber…"* page 235, 2nd paragraph, emphasis added).

Town fails to demonstrate or teach several features of the combinations of claims 21 and 40.

Firstly, the spectrum in *Town* is generated in regions (i.e. cores) with unknown diameter. However, *Town* mentions that some are a few microns or less, i.e., less than 2 microns, which is clearly less than the 4 microns set forth in the claims. Having only a vague indication of the core diameter, the skilled person would apply the common general knowledge of supercontinuum generation, as provided above and in the introduction by *Town*. Therefore, the skilled person would conclude that it was the smaller of the regions of the fiber that contributed to the widest part of the spectrum, as such regions would be more nonlinear.

Secondly, *Town* is silent with regard to the mode structure of the generated light in the nonlinear fiber. However, the light is generated in multiple regions and is therefore inherently multi-mode in the nonlinear fiber. This is also clear from Figure 1 of *Town* where the white light is clearly guided in several regions of the fiber. Accordingly, *Town* fails to disclose that more than 80% of the light of the spectrum of wavelengths is in the lowest-order transverse mode supported by the fiber. Furthermore, *Town* also fails to disclose that the micro-structured optical fiber is arranged to support propagation of the pulses in a single transverse mode.

The Examiner cites *Lam* in order to overcome the deficiencies of *Town*. *Lam* discloses a coupling method that *reduces alignment tolerances* and therefore provides easier interfacing between semiconductor devices, such as photodetectors and semiconductor lasers (e.g., VCSELs), and optical fibers. These fibers are *standard fibers* (see paragraph [0005]) which are suitable for transporting light with as little alteration as possible. Accordingly, these fibers perform a completely different function from that of the fiber in the claims. *Lam* is therefore an unsuitable reference for reaching the invention as claimed since the fiber serves a completely different purpose and the reference provides no teaching with regard to generation of a supercontinuum in a fiber from long pump pulses.

Bise does not overcome any of the above-discussed deficiencies.

In view of the foregoing amendments and remarks, the Examiner is respectfully requested to enter the foregoing amendments and withdraw the outstanding objections and rejections.

In the event that there are any questions concerning this Amendment, or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution of the application may be expedited.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: April 2, 2010

By: /WCRowland/
William C. Rowland
Registration No. 30888

P.O. Box 1404
Alexandria, VA 22313-1404
703 836 6620